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Topic Break Down

Topic	No. of Questions
Topic 1, RF Design	23
Topic 2, Protocol and Spectrum Analysis	19
Topic 3, WLAN Design	25
Topic 4, WLAN Implementation	13
Total	80

QUESTION NO: 1

You are designing a high-density 5 GHz WLAN for a lecture hall. The design requires 20 MHz channels to maximize channel reuse, but the selected APs support IEEE 802.11ac.

What is the highest number of spatial streams that an 802.11ac AP can use when operating with a 20 MHz channel?

A. One spatial stream

B. Two spatial streams

C. Four spatial streams

D. Six spatial streams

E. Eight spatial streams

ANSWER: C

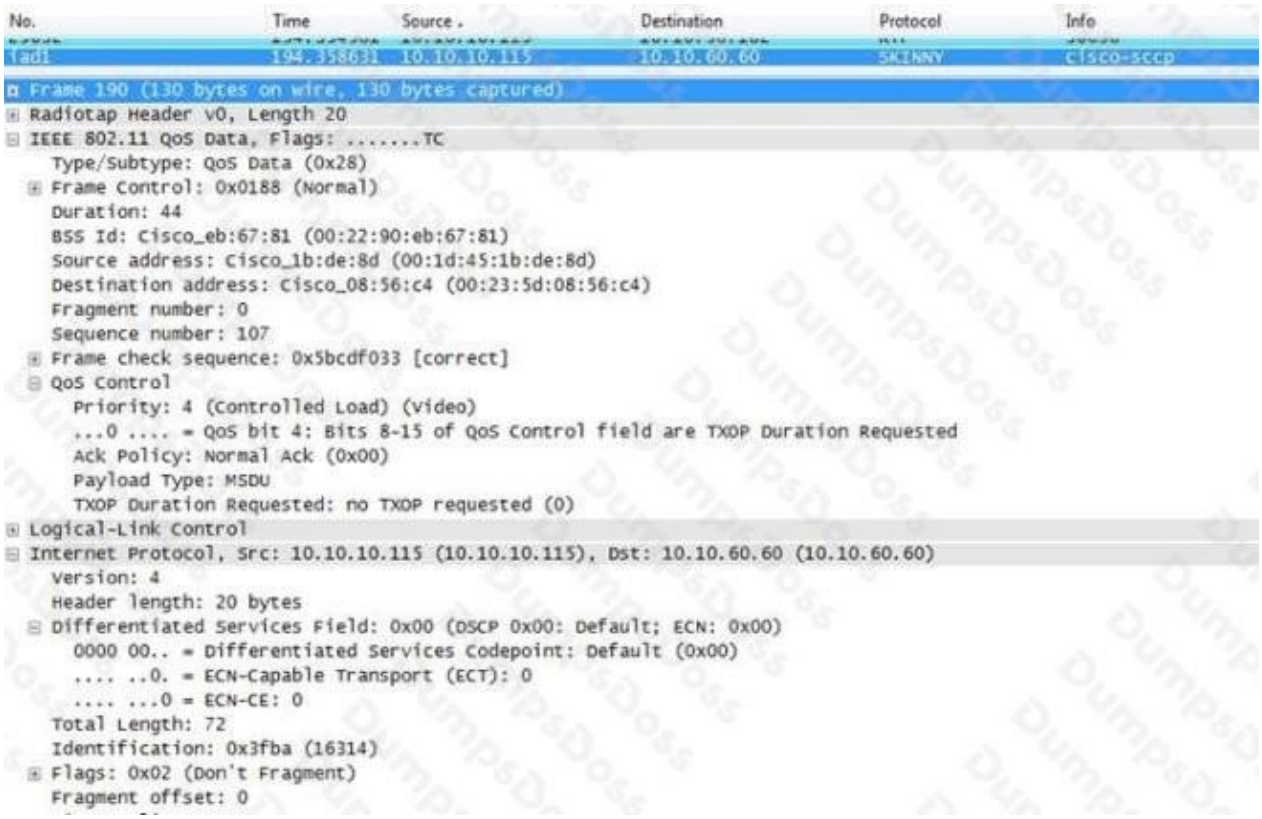
Explanation:

Four spatial streams is correct. IEEE 802.11ac supports up to eight spatial streams only when using wider VHT channel widths. With a 20 MHz VHT channel, the highest defined MCS values support up to four spatial streams. This produces a maximum 20 MHz PHY rate of 346.8 Mbps when MCS 9 and a short guard interval are used.

The practical number of streams available to a client remains limited by the capabilities of both the AP and client. Most mobile clients support one or two spatial streams, so AP stream capability should not be treated as equivalent to per-client throughput. See the IEEE 802.11ac standard listing and Cisco's 802.11ac technology overview.

QUESTION NO: 2

You captured the wireless frame shown in the exhibit during a post-deployment verification site survey.



What can you tell the customer about this network?

A. This is a video stream packet, and there is a QoS marking issue on the wired side, because the DSCP value should not be set to 0.

B. This is a voice control packet, and the configuration looks normal, as voice control may or may not have a DSCP tag.

C. This is a video stream packet, and the configuration looks normal, as DSCP is always set to 0 when 802.11e QoS is specified at Layer 2.

D. This is a voice RTP packet, and its marking was downgraded from Voice to Video which is a sign of congestion issues.

ANSWER: B

Explanation:

This is a voice control packet, and the configuration looks normal, as voice control may or may not have a DSCP tag. The wireless frame's QoS Control field identifies the traffic using the voice-control user-priority classification at the 802.11 MAC layer. This classification is handled through Wi-Fi Multimedia (WMM)/802.11e quality-of-service mechanisms, which place latency-sensitive traffic into the voice access category for prioritized medium access. That Layer 2 classification is meaningful on the WLAN independently of the IP header's DSCP value.

DSCP is an optional Layer 3 marking that is commonly used to preserve traffic treatment across routed wired networks, but its absence—or a default value of zero—in a captured packet does not by itself establish a QoS defect. A wireless design review should instead verify that the WLAN's WMM policy, admission-control requirements where applicable, and upstream QoS trust and mapping policies align with the customer's end-to-end traffic policy. The capture therefore supports reporting that the frame is receiving the expected voice-category treatment over the air, without treating the displayed DSCP value as evidence of a configuration problem. See the CWNP CWDP certification overview and Cisco's wireless QoS documentation.

QUESTION NO: 3

In an 802.11ax deployment, an AP and its associated clients support BSS coloring and spatial reuse. What is the primary purpose of the BSS color value?

A. It identifies frames belonging to the transmitting BSS versus an overlapping BSS.

B. It encrypts management frames sent by a WPA3-protected BSS.

C. It identifies the RF channel width used by the transmitting AP.

D. It allows an AP to identify Bluetooth and microwave interference sources.

E. It assigns a unique VLAN to each BSS in an ESS.

ANSWER: A

Explanation:

The BSS color value allows a station to distinguish frames from its own BSS from frames transmitted by an overlapping BSS (OBSS). This distinction supports spatial reuse decisions. For example, a station may apply an OBSS packet-detect threshold to determine whether a sufficiently weak transmission from another BSS can be ignored while it transmits within its own BSS.

BSS coloring does not eliminate co-channel interference, identify non-Wi-Fi energy sources, or replace a proper channel and power plan. It provides a mechanism for 802.11ax devices to identify overlapping Wi-Fi networks and use the medium more efficiently when RF conditions permit. See the Wi-Fi Alliance Wi-Fi 6 overview.

QUESTION NO: 4

You deployed an AP and installed its antenna, and you now need to set the AP transmit power. Given a desired EIRP of 21 dBm, and an antenna gain of 5.85 dBd connected through 25 feet of cable with a loss specification of 4 dB/100 feet. Assuming that there is no significant loss from the connectors, what should be the transmit power level for this AP?

A. 10 mW

B. 14 mW

C. 20 mW

D. 25 mW

E. 40 mW

F. 50 mW

ANSWER: D

Explanation:

25 mW is the required transmit-power setting. EIRP is calculated by adding transmitter output power and antenna gain, then subtracting losses between the transmitter and antenna. The 25-foot cable has a loss of 1 dB because its specified loss is 4 dB per 100 feet. Antenna gain expressed in dBd is referenced to a half-wave dipole, whereas EIRP uses gain referenced to an isotropic radiator (dBi). Therefore, convert 5.85 dBd to 8 dBi by adding 2.15 dB. The link-budget relationship is EIRP = transmitter power − cable loss + antenna gain. Substituting the known values gives 21 dBm = transmitter power − 1 dB + 8 dBi, so the required transmitter output is 14 dBm. Converting 14 dBm to linear power produces approximately 25 mW. This setting accounts for both the feeder loss and the antenna's gain while delivering the desired 21 dBm EIRP. The logarithmic relationship between dBm and milliwatts is described by Analog Devices' dB and dBm reference. For regulatory context, EIRP terminology and limits are used in the FCC's 47 CFR Part 15 rules.

QUESTION NO: 5

In a manufacturing facility with highly reflective materials, you are planning an upgrade to your existing 802.11b solution. You have chosen a dual-band 802.11n infrastructure product for this purpose. Your client applications include:

Handheld scanners — for inventory management

Toughbooks (laptops) — mounted on forklifts for inventory and workflow management VoWiFi phones — used by select employees throughout the facility

You are evaluating all of the 802.11n enhancements and determining which features to enable for your environment and applications.

In this scenario, what 802.11n enhancements should NOT be enabled on the 2.4 GHz radio of the new APs? (Choose two.)

A. 40 MHz channels

B. Short guard intervals

C. Block Acknowledgments

D. Frame aggregation

E. MRC

F. STBC

ANSWER: A B

Explanation:

40 MHz channels should not be enabled in the 2.4 GHz band. This band has very limited usable spectrum: a 40 MHz channel consumes most of the band and overlaps adjacent channel space extensively. In a manufacturing deployment, that reduces the ability to build a clean, reusable channel plan and increases the likelihood of co-channel and adjacent-channel contention. A 20 MHz channel plan using the non-overlapping channels is the appropriate design baseline for reliable coverage and capacity. Cisco's enterprise wireless design guidance discusses the importance of 20 MHz operation in 2.4 GHz: Cisco Wireless Technical Reference.

Short guard intervals should also remain disabled in this highly reflective environment. 802.11n short GI reduces the guard interval from 800 ns to 400 ns to gain PHY-rate efficiency, but it provides less tolerance for multipath delay spread. Metal, machinery, shelving, and other reflective surfaces can produce delayed signal copies. Retaining the normal 800 ns guard interval gives OFDM symbols greater protection from inter-symbol interference and supports more consistent operation for mobile forklift-mounted laptops, scanners, and latency-sensitive voice clients. The 802.11n amendment defines guard-interval operation and HT PHY behavior: IEEE 802.11n.

QUESTION NO: 6

A customer wants a guest WLAN that provides Internet access but prevents guests from accessing internal corporate resources and from communicating directly with other guest devices on the same WLAN.

Which design controls can help meet these requirements? (Choose two.)

A. Enable client isolation for the guest WLAN.

B. Apply firewall or ACL policy that denies guest access to internal networks.

C. Map the guest SSID to the same unrestricted VLAN used by corporate clients.

D. Use a hidden SSID so guest clients cannot discover the WLAN.

E. Configure a longer beacon interval to prevent peer-to-peer traffic.

ANSWER: A B

Explanation:

Client isolation can prevent direct Layer 2 communication between wireless clients associated to the same guest WLAN. This reduces the opportunity for one guest device to reach or attack another guest device through the AP.

Firewall or ACL enforcement at the guest-network boundary can permit only the services intended for Internet access while denying traffic to internal address ranges and services. Guest isolation at the AP does not replace network segmentation and policy enforcement, because guests must also be prevented from reaching internal networks through the wired infrastructure.

A separate SSID alone does not provide security unless it is mapped to an appropriately segmented VLAN or tunnel and protected by policy controls. Cisco discusses guest access architecture and policy controls in its guest access configuration guidance.

QUESTION NO: 7

You are designing a WLAN for barcode scanners in a warehouse. The scanners transmit small, infrequent packets and spend most of their time in a power-save state. The design must minimize battery consumption without creating excessive multicast and broadcast latency.

Which WLAN features or configuration practices should be considered? (Choose two.)

A. Configure and validate an appropriate DTIM interval for the application.

B. Validate the scanners' power-save behavior with the intended WLAN configuration.

C. Disable all beacon transmissions to prevent clients from waking unnecessarily.

D. Configure every multicast frame for transmission at the highest supported PHY rate.

E. Require scanners to use 40 MHz channels to reduce power consumption.

ANSWER: A B

Explanation:

DTIM interval should be considered because APs buffer group-addressed traffic for stations in power-save mode until a Delivery Traffic Indication Message is transmitted. A long DTIM interval can increase the time before sleeping clients receive buffered broadcast or multicast traffic, while a very short interval can increase wake activity and battery use.

Client power-save behavior must also be validated with the actual scanner platform. Some scanners use legacy power save, while others support WMM Power Save or vendor-specific battery-management behavior. The scanner's wake schedule, application traffic pattern, and expected response time determine whether the WLAN configuration is suitable. The beacon interval alone does not define the DTIM frequency; DTIM period and beacon interval operate together. See the Wi-Fi Alliance overview of Wi-Fi CERTIFIED WMM and the IEEE 802.11 standard family.

QUESTION NO: 8

After surveying for the ideal mounting locations for APs, you have been asked to compromise RF propagation optimization due to aesthetic concerns raised by your customer. In the end, you've decided to mount the APs in the ideal locations and paint the APs so they go unnoticed in the environment.

What is a valid recommendation or consideration when painting APs? (Choose two.)

A. Always use paints with metallic dye in them to prevent potential RF propagation impact.

B. Do not paint the notification LEDs on the AP, but configure them to be dim or turned off altogether until troubleshooting is required.

C. Painting APs may void the product manufacturer's warranty.

D. Most AP models for indoor environments come in a variety of form factors and colors. Painting is never recommended.

E. Painting APs always introduces a fire and gas emissions hazard and should be avoided for all indoor APs.

ANSWER: B C

Explanation:

Do not paint the notification LEDs on the AP, but configure them to be dim or turned off altogether until troubleshooting is required. This preserves the LEDs' operational usefulness for installation, status verification, and fault isolation. When an AP must visually blend into its surroundings, disabling or dimming the LEDs through the device's supported management interface is preferable to covering them with paint, because technicians can restore normal LED behavior when on-site diagnostics are needed. Painting APs may void the product manufacturer's warranty. AP enclosures, labels, vents, antennas, and exterior materials are part of the manufacturer-tested product assembly; modifying that assembly can affect eligibility for warranty service and can complicate hardware replacement or support claims. Before any cosmetic modification, the designer should obtain written confirmation from the AP vendor and customer, confirm that regulatory labels remain intact and visible as required, and document the decision in the design and installation records. Cisco's published warranty terms emphasize that coverage is subject to the applicable warranty conditions: Cisco warranty information. For regulatory labeling considerations applicable to radio equipment, see the FCC's equipment-authorization guidance: FCC Equipment Authorization.